10. Section 80.802 is amended by revising paragraph (a) to read as follows:

§ 80.802 Inspection of station.

(a) Every ship of the United States subject to Part II of Title III of the Communications Act or Chapter IV of the Safety Convention equipped with a radiotelegraph installation must have the required radio equipment inspected by an FCC-licensed technician holding a Second Class Radiotelegraph Operator's Certificate, or First Class Radiotelegraph Operator's Certificate once every 12 months. If the ship passes the inspection the technician will issue a Cargo Ship Safety Radio Certificate. Cargo Ship Safety Radio Certificates may be obtained from the Commission's National Call Center--(888) 225-5322--or from its Forms contractor.

(1) * * *

* * * * *

11. Section 80.818 is amended by revising paragraph (b) to read as follows:

§ 80.818 Direction finding and homing equipment.

* * *

(b) *On or after May 25, 1980,* must be equipped with radio direction finding apparatus having a homing capability in accordance with § 80.824.

12. Section 80.819 is amended by revising paragraph (a) to read as follows:

§ 80.819 Requirements for radio direction finder.

(a) The radio direction finding apparatus must:

(1) * * *

* * * * *

13. Section 80.822 is amended by removing paragraph (b).

14. Section 80.835 is amended by removing the fourth sentence in paragraph (a).

15. Section 80.851 is amended by renumbering the text as paragraph (a) and adding a new paragraph (b) to read as follows:

§ 80.851 Applicability.

(a) * * *

(b) Until February 1, 1999, the inspection of all cargo vessels equipped with a radiotelephone installation operated on domestic or international voyages must be conducted by an FCC-licensed technician in accordance with § 80.59 once every 12 months. If the ship passes the inspection the technician will issue a Safety Certificate. Cargo Ship Safety Radio Certificates may be obtained from the Commission's National Call Center--(888) 225-5322--or from its forms contractor.

16. Section 80.903 is amended by revising the text to read as follows:

§ 80.903 Inspection of radiotelephone installation.

Every vessel subject to Part III of Title III of the Communications Act must have a detailed inspection of the radio installation by an FCC-licensed technician in accordance with § 80.59 once every five years. The FCC-licensed technician must use the latest FCC Information Bulletin, *How to Conduct an Inspection of a Small Passenger Vessel*. If the ship passes the inspection, the technician will issue a Communications Act Safety Radiotelephony Certificate. Communications Act Radiotelephony Certificates may be obtained from the Commission's National Call Center–(888) 225-5322–or from its forms contractor.

* * * * *

17. Section 80.1067 is amended by revising paragraph (a) to read as follows:

§ 80.1067 Inspection of station.

(a) Ships must have the required equipment inspected at least once every 12 months by an FCC-licensed technician holding a GMDSS Radio Maintainer's License. If the ship passes the inspection the technician will issue a Safety Certificate. Safety Certificates may be obtained from the Commission's National Call Center at 1-888-CALL FCC (1-888-225-5322) or from its field offices. The effective date of the ship Safety Certificate is the date the station is found to be in compliance or not later than one business day later. The FCC-licensed technician must use the latest FCC Information Bulletin, *How to Conduct a GMDSS Inspection*. Contact the FCC's National Call Center at 1-888-CALL FCC (1-888-225-5322) to request a copy.

* * * * *

ATTACHMENT D

How to Conduct an Inspection of a Small Passenger Vessel

By definition, small passenger vessels are vessels that are less than 100 gross tons and carry more than six passengers for hire. A passenger for hire is defined as a person who pays money or any other kind of material goods or services as compensation for being carried on a vessel. Small passenger vessels are required to carry radio equipment to comply with the requirements of the Communications Act, sections 381-386.

Radio carriage requirements for small passenger vessels depend on the area of operation and the distance from the nearest land. A small passenger vessel's area of operation is specified on the Coast Guard's Certificate of Inspection. Generally, a small passenger vessel must carry radio equipment to meet the communication requirements in the area of operation specified by the Coast Guard.

1. Small passenger vessels that sail only on inland lakes and waterways (other than the Great Lakes) are exempt from radio carriage regulations. Likewise, small passenger vessels of less than 50 gross tons that sail in the open ocean or in bays, sounds, and other tidewater areas bordering on the open sea but never more than 300 meters (1000 feet) from shore are also exempt from radio carriage regulations. If vessels of this class carry a radio, no inspection of the radio is required and, if the radio operates only on VHF frequencies and if the vessel does not sail to a foreign port, the radio is exempt from the licensing requirement.

2. Small passenger vessels that sail on the Great Lakes must meet the radio carriage requirements of the Great Lakes Agreement. This is a treaty between the United States and Canada governing radio carriage requirements for ships navigating on the Great Lakes. Those rules are contained in Subpart T of Part 80 of FCC Rules, Sections 80.951 through 80.971. The Coast Guard also requires carriage of an EPIRB if the vessel sails more than 5.6 km (3 miles) from shore on the Great Lakes.

3. Small passenger vessels that sail in bays, harbors, rivers and sounds adjacent to the open ocean or in the open ocean not more than 32 km (20 miles) from the nearest land but always within communication of a VHF coast station that maintains a continuous watch on VHF Channel 16 (156.8 MHz) must carry a VHF radio installation. The Coast Guard also requires carriage of an EPIRB if the vessel sails more than 4.8 km (3 miles) from shore in the open sea.

4. Small passenger vessels that sail in the open sea more than 32 km (20 miles) but not more than 160 km (100 miles) from the nearest land must also carry a medium frequency (MF) radio installation providing communication capability on 2182, 2638, 2670 kHz and a public coast station frequency in the 1710-2850 kHz band.

5. Small passenger vessels sailing more than 160 km (100 miles) but not more than 320 km (200 miles) from shore must, in addition to the VHF and MF installations mentioned above, carry <u>either</u>

    a) a single sideband radiotelephone installation capable of operating on all of the medium frequency (MF) and high frequency (HF) channels used for distress and safety communications listed in Section 80.905(a)(3)(iii)(A) <u>or</u>

b) an INMARSAT ship earth station through which continuous distress alerting by satellite is available. The earth station must include an EGC receiver to enable receipt of NAVTEX information when the vessel is beyond the range of stations transmitting NAVTEX on 518 kHz.

The vessel must also carry a reserve source of energy capable of powering all of the above equipment, must carry a NAVTEX receiver for receipt of maritime safety information and be equipped with a Category 1 satellite (406 MHz) EPIRB. The EPIRB may be the same one required by Coast Guard rules on voyages of more than 5.6 km (3 miles) from shore. If a ship earth station is elected in lieu of the single sideband combined MF/HF installation described above, and if it is an INMARSAT A, the reserve source of energy must include an uninterruptable power supply so that if regular ship's power is interrupted, satellite communications will still be possible. If the earth station is an INMARSAT C, the uninterruptable power supply is not required.

6. Small passenger vessels operated more than 320 km (200 miles) from shore must carry, in addition to all of the equipment specified above, a radiotelephone distress frequency watch receiver meeting the requirements of Section 80.269 of the Rules and an automatic radiotelephone alarm signal generator meeting the requirements of Section 80.221 of the Rules.

Regardless of the area of operation authorized by the Coast Guard's Certificate of Inspection, all compulsory small passenger vessels must have the following items:

1. A valid station license must be posted at the station's control point or otherwise readily available to the operator on duty. The license must:

a) Not be expired;

b) Show the current vessel owner, operator, or master as the licensee (A license issued to a previous owner is not valid, even though not yet expired.);

c) Indicate that the vessel is licensed to comply with Title III, Part III of the Communications Act (A license indicating a recreational vessel is unacceptable. If so licensed, the licensee must apply for a license modification.);

d) Accurately reflect the kinds of transmitters installed aboard the vessel (If transmitters are installed for frequency bands not shown on the station license, the licensee must apply for a license modification.).

2. A licensed radio operator must be available during an inspection and must be assigned to the vessel whenever it sails. The minimum class of licensed operator for compulsory vessels is the holder of a Marine Radio Operator Permit. Individuals holding a General Radiotelephone Operator License, a first or second class radiotelegraph operator's certificate, or a GMDSS Radio Operator's License may also serve as radio operators aboard compulsory small passenger vessels. The holder of a Restricted Radiotelephone Operator Permit is not authorized to operate the radio of a compulsory vessel.

3. If the inspection is for renewal of an expiring Communication Act Safety Radiotelephony Certificate, the soon-to-expire certificate should be available for inspection on board the vessel.

4. A current copy of Part 80 of FCC Rules should be available. It may be kept either on board the vessel or at a convenient location on shore.

5. Small passenger vessels must have a radio station log containing the following entries:

a) A summary of all distress, urgent, and safety traffic;

b) A summary of communications conducted on other than VHF frequencies between the ship station and land or mobile stations (not required if only a VHF radio is installed);

c) A reference to important service incidents;

d) The position of the vessel at least once a day;

e) The name of the operator on duty and the beginning and ending of the watch period;

f) The time the watch begins when the vessel leaves port, and the time it ends when the vessel returns to port;

g) The time the watch is discontinued, including the reason, and the time the watch is resumed;

h) The times when storage batteries provided as a part of the required radiotelephone installation are placed on charge and taken off charge;

i) The results of required equipment tests, including specific gravity of lead-acid storage batteries and voltage readings of other types of storage batteries provided as a part of the compulsory radio installation.

j) The results of inspections and tests of compulsorily fitted lifeboat radio equipment (not required if not fitted);

k) A daily statement about the condition of the required radiotelephone equipment, as determined by either normal communication or test communication.

If the vessel is subject to the Bridge-to-Bridge Radiotelephone Act (more than 20 meters in length or more than 100 gross tons and carrying at least one passenger), the radio log must also show when the master is notified about any improperly operating radiotelephone equipment.

The vessel's radio log must also include an easily identifiable section reserved for recording the details of the radio inspection as follows:

a) The date the inspection was conducted;

b) The date by which the next inspection needs to be completed;

c) The inspector's printed name, address and class of FCC license (including the serial number).

d) The results of the inspection, including a list of any repairs made.

e) The inspector's signed and dated certification that the vessel meets the requirements of Subpart S of Part 80 of FCC Rules (and Subpart U if the vessel is subject to the Bridge-to-Bridge Act).

f) The vessel owner, operator, or ship's master's signed and dated certification that the inspection was satisfactory.

6. Every compulsory small passenger vessel must carry a VHF radio installation consisting of a transmitter and receiver capable of operating on at least VHF marine channels 6 and 16 (156.300 and 156.800 MHz, respectively) and on at least one frequency used by a local marine operator (public coast frequency) serving the area that the vessel normally traverses. The control point must be located convenient to the location from which the vessel is steered.

The transmitter must:

a) Have a power output of not less than 20 watts nor more than 25 watts with capability of reducing power to not more than 1 watt.

b) Maintain a frequency tolerance of ±10 Hz/MHz.

c) Be capable of passing a 10 minute power test with the transmitter drawing power only from the ship's battery. At the end of a 10-minute transmission the transmitter input voltage must be not less than 11.5 volts and the power output must be not less than 15 watts. For terminal voltages between 11.5 and 12.6, the terminal output power must be not less than that calculated with the formula:

$$P=4.375(V)-35.313$$

d) Be capable of voice modulation that normally produces peaks between 75 and 100 percent (100% being defined as ±5 kHz deviation).

The receiver provided with the VHF installation must:

a) Be capable of being tuned to at least the above channels required for the transmitter.

b) Have sufficient sensitivity to permit communication with coast stations and other ship stations in the vessel's area of operation.

c) Be fitted with a loudspeaker having sufficient output to allow reception of messages in ambient noise levels normally associated with the environment aboard vessels.

d) Be fitted with an illuminated dial or other illumination so that the radio operator can visually determine to which radio channel the equipment is tuned during night hours.

7. The radio installation must be connected to a source of energy capable of powering the equipment at its full rated output. If the source of energy consists of batteries, they must be installed as high above the bilge as practicable, mounted securely to prevent shifting with motion of the vessel, provided with a means of charging and provided either with an ammeter to indicate charging rate or an expanded scale voltmeter to indicate state of charge. There must be at least 26 cm (10 inches) of head room over the batteries to allow servicing and ventilation. The batteries must be of sufficient capacity to provide for at least 3 hours of continuous operation of the radio at its rated power output.

FCC rules do not prohibit use of the vessel's engine starting battery as the main source of energy. However, an emergency situation at sea involving an engine failure might result in a discharged engine starting battery at a time when the radio would be needed to call for assistance. Therefore, inspectors should encourage vessel operators to provide a main energy source, other than the engine starting battery, that would be less likely to become depleted in an emergency situation.

Whenever the age, appearance, size, energy requirements or service history of a storage battery used as a main or reserve source of energy makes it appear to the inspector that it might no longer have sufficient capacity to meet the 3-hour operating requirement, the inspector should make a discharge test to confirm the required capacity.

8. If the vessel is over 100 gross tons in size it must be provided with a reserve source of energy in addition to the main source of energy. When the reserve energy source consists of batteries, they must meet the same requirements as the main source of energy. In addition the reserve source of energy must be independent of the vessel's propulsion system and independent of all other electrical systems on the vessel. The reserve source of energy must be immediately available for use at any time.

9. The VHF installation must be connected to an efficient, vertically polarized antenna mounted as high above the waterline as practicable. The antenna must be connected to the transmitter and receiver with coaxial cable that is as short as practicable, protected from physical damage, sealed to prevent entry of water and capable of carrying radio frequency energy without excessive loss. The inspector should reject the antenna-transmission line assembly if the standing wave ratio equals or exceeds 2.5:1 at the operating frequencies.

The installation must be provided with a means of indicating visually whenever the transmitter is supplying power to the transmitting antenna.

The radio should be installed in a protected area of the vessel where it is available to the helmsman and protected from water spray. It should also be protected from access by unauthorized individuals at times when the vessel is not manned.

10. If the vessel is certified for operation beyond 32 kilometers (20 miles) from shore or if it sails beyond the range of VHF coast stations it must, in addition to the VHF installation, carry a MF (medium frequency) installation consisting of:

A transmitter capable of:

a) At least 60 watts (PEP) power output with type J3E emission (single sideband, upper sideband only);

b) Operation on 2182 kHz and 2638 kHz. Additionally, at least one MF ship-to-shore public coast working frequency is required when in an area served by a public coast operating in the 1700 to 2850 kHz band. When operating in an area not served by an MF public coast station, 2670 kHz is also required;

c) Maintaining a frequency tolerance of ±20 Hz. If the transmitter is also fitted for narrow band direct printing telegraphy or digital selective calling, the frequency tolerance is ±10 Hz (20 Hz if the transmitter was installed before January 2, 1992).

The transmitter must be provided with a device to indicate when the transmitter is supplying power to the antenna.

The MF receiver must be capable of receiving J3E emission on all of the frequencies required for transmitting. It must also be capable of receiving type H3E in addition to J3E emission on 2182 Khz. It must have adequate sensitivity to enable satisfactory communication with other stations in the vessel's area of operation.

11. The MF transmitter and receiver should be provided with an antenna and tuning mechanism for efficient radiation on the required frequencies. As with the VHF installation, the MF equipment should be installed in a protected area of the vessel and secured against unauthorized access at times when the vessel is unmanned. When a reserve source of electrical energy is required, the MF installation must be capable of being powered by the reserve energy source in addition to the main energy source.

INSPECTION REQUIREMENTS

Small passenger vessels required to carry radio installations must have the radio equipment inspected at least once every five years. If a vessel operator is unable to have his vessel reinspected before the end of the five-year interval, he may apply for a temporary waiver of inspection for a period of up to 90 days. A fee is required. Vessel operators needing this service should call 888-225-5322 for further information. Vessel operators should be urged to have their vessels inspected in a timely manner whenever feasible so as to avoid the need for applying for certificate extension.

A ship radio inspection should include a complete check of all components of the required communications equipment including installation, technical parameters, capabilities, licenses, operators, operating practices, operating records, and equipment maintenance practices and provisions:

1. Where either Coast Guard or FCC rules require carriage of a 406 MHz EPIRB, checks should be made to assure that its self-test capability is functional, that the equipment is registered with NOAA as required by FCC rules, that the registration data is current and accurate, that the equipment is mounted in a manner such that it would not likely become entangled or obstructed by the vessel's superstructure if the vessel should sink and the EPIRB be released, that the equipment's battery expiration date has not passed, and that the date on the automatic hydrostatic release mechanism has not expired. **DO NOT**, under any circumstances, cause transmission of an actual distress alert while checking the equipment.

2. The VHF radio should be checked to ascertain that it can transmit and receive on the required frequencies, maintain the required frequency tolerance, that the transmitter modulation level is within tolerance, that the power output is within specified limits, that the proper lighting and power output indicators are provided. Compliance with the ten minute power test should be demonstrated.

3. Give the VHF antenna and transmission line a careful visual inspection and measure the reflected power. Any visible physical damage, improper cable routing or excess reflected power should be corrected.

4. If an MF/HF installation is required, it should be given the same complete check, including assurance that it is capable of transmitting and receiving on all of the required frequencies.

5. If radar transponders are required, they should be checked to make certain that they are in operating condition.

6. If survival craft portable radiotelephones are required, they should be checked to make certain that they operate on the required frequencies, are in good operating condition and that the battery dates are not expired.

SMALL PASSENGER VESSELS SUBJECT TO SOLAS

Passenger vessels that sail to foreign countries are subject to SOLAS regulations in addition to the Communications Act. A foreign voyage is defined as docking or anchoring at a foreign port. A vessel sailing into foreign territorial waters and returning to a United States port without docking or anchoring in a foreign harbor or port is not making a foreign voyage.

FCC Rules [Section 80.933] exempt most small passenger vessels making certain foreign voyages from most SOLAS requirements (except the annual inspection requirement), provided they meet the Section 80.933 technical requirements. These requirements include carriage of:

a) A Category I, 406 MHz EPIRB;

b) A NAVTEX receiver;

c) Three survival craft portable radiotelephones;

d) Two radar transponders.

Small passenger vessels that make foreign voyages must be inspected once every 12 months rather than once every five years. Vessel operators should make every effort to have their vessels reinspected and recertificated prior to expiration of the 12 month period of validity of their certificates. If it is inconvenient for a vessel operator to have a vessel reinspected before the end of the 12 month period of validity of its certificate, the operator may apply to the Commission for an extension of up to 30 days. A fee is required. The vessel operator should call 888-225-5322 for detailed application instructions. Inspectors should urge vessel operators to have renewal inspections performed in a timely manner so that application for extension of certificates is unnecessary.

Vessels subject to SOLAS but exempted from all but the annual inspection requirement must have all equipment, including the extra equipment required to qualify for the exemption, inspected annually. If the inspector discovers technical deficiencies that cannot be corrected during the course of the inspection, the inspector should decline to certify the inspection in the ship's log and should withhold issuance of a renewal certificate until the deficiencies are corrected.

NOTES

If the vessel being inspected is larger than 100 gross tons or is more than 20 meters in length, it must also carry a radiotelephone installation that meets the requirements of the Bridge-to-Bridge Act. (Sections 80.1101 through 80.1023) These requirements are similar to other Communications Act requirements except that the VHF radiotelephone must have operating capability on Channels 13 (156.650 MHz) and 22A (157.100 MHz). If the vessel transits

certain waterways of the lower Mississippi River, the bridge-to-bridge radio must also be capable of operating on Channel 67 (156.375 MHz).

Vessels carrying a bridge-to-bridge radio installation should have that installation inspected concurrently with the inspection of the other compulsory equipment. If deficiencies are discovered in the bridge-to-bridge installation that cannot be immediately corrected, the inspector should note pertinent facts in the radio log. Since the bridge-to-bridge radio is also a Coast Guard requirement, the inspector should bring noted deficiencies to the attention of his local Coast Guard Marine Safety Office. Deficiencies in the bridge-to-bridge radio equipment will not, however, affect approval of other compulsory radio components nor hinder issuance of a safety radiotelephony certificate.

ATTACHMENT E

How to Conduct a GMDSS Inspection.

The GMDSS replaces the ship-to-ship safety system that used manual Morse code with a ship-to-shore safety system that uses satellite and automated terrestrial communications systems. The GMDSS requires ships to carry various types of communications equipment depending upon the voyages of the ship rather than the gross tonnage. (See § 80.1069.) The GMDSS also requires ships to comply with certain functional requirements. (See § 80.1081.) The GMDSS rules are found in subpart W of Part 80 [Code of Federal Regulations, Title 47, Part 80].

Definitions of Sea Areas. Ships must comply with the requirements for all sea areas in which they operate.

Sea Area A1--Basically VHF
Sea Area A2--Basically MF
Sea Area A3--Ocean areas within INMARSAT coverage. Below 70 degrees N Latitude and above 70 degrees S Latitude. Most ships will operate in Sea Area A3.
Sea Area A4--Out of INMARSAT coverage area. Above 70 degrees N Latitude and below 70 degrees S Latitude. These ships must be equipped with an HF DSC installation.

Ship radio equipment.

I. All GMDSS ships must comply with the following. (§ 80.1085)

1. VHF installation. . . . . (§ 80.1085(a)(1)&(2))

   A. Required DSC channel 70. Must be able to initiate transmission of distress alerts from position from which ship is navigated.
   B. Required channels for radiotelephony (transmit and receive)--6, 13, 16
   C. Separate, dedicated, non-scanning receiver capable of monitoring DSC on VHF channel 70 (Accept either a separate radio installation or a separate receiver combined with the VHF radio. In either event, the ship must have continuous monitoring capability for DSC on channel 70.)
   D. Transmitter power output between 6 and 25 watts. . . . . (§ 80.1101(c)(2).
   E. Frequency tolerance 10 Hz/MHz (§ 80.209(a)(5)(ii).
   F. Type accepted for GMDSS (must have a label so stating). . . . . (§ 80.1103(e))

2. SART--Search And Rescue Transponder. . . . . (§ 80.1085(a)(3))

   A. Two required for ships 500 gross ton or greater. One required for ships of between 300 and 500 gross tons. . . . . (§ 80.1101).
   B. Type accepted for GMDSS (must have a label so stating). . . . . (§ 80.1103(e))
   C. Self test capability required.

3. NAVTEX receiver . . . . . (§ 80.1085(a)(4)).
   A. Dedicated receiver
   B. Type accepted for GMDSS (must have a label so stating). . . . . (§ 80.1103(e))
   C. Capable of receiving NAVTEX information in all areas in which ship operates.

4. INMARSAT ship earth station with enhanced group calling, *e.g. SafetyNet* or HF direct printing equipment capable of receiving HF maritime safety information. NOTE: This requirement only applies to ships operated in areas where NAVTEX is not available. . . . . (80.1087(a)(5))

5. A category 1, 406 MHz EPIRB. . . . . (§ 80.1085(a)(6))
   A. Must have an automatic release mechanism that is not likely to be blocked if ship should capsize. Must also be capable of manual release, manual activation, and of automatic activation when placed in water.
   B. Battery date not expired.
   C. Registered with NOAA
   D. Type Accepted for GMDSS (must have a label so stating). . . . . (§ 80.1103(e))
   E. Self test capability.

6. MF Radiotelephone installation (See NOTES 1 and 2 below). . . . . (§ 80.1085(a)(6))
   A. Distress frequency watch receiver must comply with § 80.807.
   B. Auto alarm generator must comply with § 80.807.
   C. Must operate on 2182 kHz. Other frequencies optional.

7. IMO publication *GMDSS Master Plan of Shore-Based Facilities* available on board.

8. Must be able to initiate distress alert from position from which the vessel is normally navigated.

NOTE 1: Ships operating only in Sea Area A1 do not have to carry the auto alarm signal generator.

NOTE 2: Ships constructed after February 1, 1997, do not have to carry the above MF radiotelephone distress frequency watch receiver nor the autoalarm signal generator.

II. SEA AREA A1. . . . . . (§ 80.1087)

Ships that operate only in Sea Area A1 must meet the above requirements for all ships and the following:

A. Be capable of transmitting a distress message using one of the following: (§ 80.1087(a))
1. A second VHF installation; or,
2. A second MF installation; or,
3. A separate HF installation; or,
4. A separate INMARSAT installation; or,
5. By using the Category I, 406 MHz EPIRB (this requirement may be met by either mounting the EPIRB required for all ships near the conning position or by having remote activation capability).

B. The VHF installation required for all ships must be capable of operating on all marine VHF channels. . . . . (§ 80.1087(b))

Inspection notes: It is unlikely that you will inspect a ship that is certified to operate only in Sea Area A1.

III. Sea Areas A1 and A2 . . . . . (§ 80.1089)

1. Ships that operate in Sea Area A1 and A2 must meet the above requirements for all ships and the following:

   A. An MF installation with DSC capability
      1. 2187.5 kHz for DSC alerting
      2. 2182 kHz for radiotelephony distress and safety communications
   B. An MF radio installation capable of continuously monitoring 2187.5 kHz DSC (This may be combined with the above installation, but must provide a separate DSC receiver).
   C. Means to initiate a distress alert by either:
      1. The category I, 406 MHz EPIRB (This requirement may be met by installing the 406 MHz EPIRB close to the conning position or by having remote activation capability); or,
      2. A separate HF installation with DSC capability; or,
      3. A separate INMARSAT installation.
   D. A radio installation capable of transmitting and receiving general radio communications using radiotelephony or direct-printing telegraphy by either:
      1. An MF or HF installation with the capability to operate on working frequencies in the bands 1605-4000 kHz or 4000-27500 kHz (This capability may be added to the MF installation.); or,
      2. An INMARSAT ship earth station.

Inspection notes: Conduct a radio check on the MF installation.

IV. Sea Areas A1, A2 and A3 ..... (§ 80.1091)

1. Ships that operate in Sea Areas A1, A2 and A3 must meet the requirements for all ships and either, paragraph 2 or 3 of the following:

2. Satellite:
   A. An INMARSAT ship earth station capable of
      1. Transmitting and receiving distress and safety communications by means of direct printing telegraphy,
      2. Transmitting and receiving distress priority calls,
      3. Maintaining watches for shore-to-ship distress alerts including those directed to specifically defined geographical areas,
      4. Transmitting and receiving general radiocommunications using either radiotelephony or direct-printing telegraphy.
   B. An MF radio installation including
      1. 2187.5 kHz transmit and receive using DSC
      2. 2182 kHz using radiotelephony and
      3. Continuous monitoring capability of 2187.5 kHz DSC (may be combined with MF installation, but must have separate receiver).
   C. Means to initiate a distress alert by either:
      1. A category I, 406 MHz EPIRB (This requirement may be met by installing the 406 MHz EPIRB close to the conning position or by having remote activation capability); or,
      2. A separate HF installation with DSC capability; or,
      3. A separate INMARSAT installation

3. Automated terrestrial:

   A. An MF/HF radio installation capable of :
      1. Transmitting and receiving on all distress frequencies in the band 1605-27500 kHz using DSC, radiotelephony, and narrow-band direct printing telegraphy,.
      2. Selecting any of the DSC distress and safety frequencies at any time,
      3. Maintaining a DSC watch on 2187.5 kHz, 8414.5 kHz and on at least one of the DSC frequencies 4207.5 kHz, 6312 kHz, 12577 kHz, or 16804.5 Hz. (The watch-maintaining receiver may be separate from or combined with the MF/HF installation.)
   B. Means to initiate a distress alert by either:
      1. The category I, 406 MHz EPIRB required for all ships. (This requirement may be met by installing the 406 MHz EPIRB close to the conning position or by having remote activation capability); or,
      2. A separate INMARSAT installation.
   C. Capability to transmit and receive general radio communications using radiotelephony and direct printing telegraphy in the bands 1605-4000 kHz and 4000-27500 kHz. (This requirement may be fulfilled by adding this capability

to the MF/HF installation).

V. Sea Areas A1, A2, A3 and A4.

1. Ships that operate in Sea Areas A1, A2, A3 and A4 must meet the requirements for all ships above, and those for Sea Areas A1, A2 and A3 listed above except that the satellite option available in the A3 area is not available in the A4 area and the automated terrestrial option listed above for the A3 area becomes mandatory:

A. An MF/HF radio installation capable of :

1. Transmitting and receiving on all distress frequencies in the band 1605-27500 kHz using DSC, radiotelephony, and narrow-band direct printing telegraphy,
2. Selecting any of the DSC distress and safety frequencies at any time,
3. Maintaining a DSC watch on 2187.5 kHz, 8414.5 kHz and on at least one of the DSC frequencies 4207.5 kHz, 6312 kHz, 12577 kHz, or 16804.5 Hz. (The watch-maintaining receiver may be separate from or combined with the MF/HF installation.)

B. Means for initiating a distress alert by <u>both</u>:

1. The category I, 406 MHz EPIRB required for all ships. (This requirement may be met by installing the 406 MHz EPIRB close to the conning position or by having remote activation capability.) <u>and</u>
2. The MF/HF installation using DSC on any of the above DSC distress alerting frequencies. It must be possible to initiate the distress alert by this means from the position from which the ship is normally navigated.

C. Capability for transmitting and receiving general radio communications using radiotelephony and direct printing telegraphy in the bands 1605-4000 kHz and 4000-27500 kHz. This requirement may be fulfilled by adding this capability to the MF/HF installation.

VI. Survival Craft Equipment.

1. Cargo ships that are $\geq$ 300 gross tons but $\leq$ 500 gross tons must carry 2 two-way VHF portable radiotelephones (80.1101(c)(7)). The equipment must be type accepted for GMDSS use and must bear a label so stating. Alternatively, the ship's survival craft may be fitted with a fixed VHF radio installation(s) in which case the portable units are not required. Portable radiotelephones provided on board a vessel prior to February 1, 1992, that do not comply fully with the performance standards of Section 80.1101(c)(7) may continue to be used on that vessel until February 1, 1999, provided they are compatible with approved units.

2. Cargo ships that are ≥ 500 gross tons and passenger vessels engaged on an international voyage must carry 3 two-way VHF portable radiotelephones (80.1101(c)(7)). If the ship's survival craft are fitted with fixed VHF radiotelephone installations, the portable units are not required.

Inspection notes. Check frequency tolerance, power output, modulation, battery manufacture date & half-life date (80.1095(c)). Non-complying handhelds provided on board before 2-1-92 can continue to be used until 2-1-99. Except for non-complying units mentioned above, survival craft radiotelephones (whether fixed or portable) must be type accepted for GMDSS use and must bear a label so stating ..... (80.1103(e)).

VII. Ship sources of energy.

1. Reserve power must meet either six hour or 1 hour requirement.

   A. Six hours for ships constructed before February 1, 1995, or ships that do not meet the emergency power requirements of SOLAS, Chapter II-1, Regulation 42 or 43.
   B. One hour for ships constructed after February 1, 1995, or older ships that voluntarily comply with SOLAS, Chapter II-1, Regulation 42 or 43. ..... (80.1099(b)(2)

2. An uninterruptable power supply is needed if an INMARSAT installation is required. ..... (80.1099(i))

3. When the reserve source of energy consists of batteries, equipment must be provided for automatically recharging them to minimum required capacity in not more than 10 hours. ..... (80.1101(f)(1))

4. When the reserve source of energy consists of batteries, the battery capacity must be checked at intervals not exceeding 12 months. If not completed within past 12 months, this must be done during inspection. ..... (80.1101(f)(2))

5. Storage batteries provided as a reserve source of energy must be installed in accordance with applicable electrical codes and good engineering practice. They must be protected from adverse weather and physical damage. They must be readily accessible for maintenance and replacement. ..... (80.1101(g))

VIII. Separate Lighting. Permanently installed lighting sufficient to illuminate the operating controls of the radio installation and powered from a source independent of the ship's main and emergency power sources must be provided. ..... (80.1083(b)(4))

IX. Publications and documents.

1. Valid station license ..... (80.405)
2. Operator license(s) ..... (80.407(b)

3. Two operators (GMDSS Radio Operator (13.2)) are required, one must be designated as the primary operator in times of distress. ..... (80.1073(a))
4. One member of crew with GMDSS Radio Maintainer License if on-board maintenance option is elected. 80.1074
5. Station log ..... (80.409(a), (b) and (e)).
6. Publications:
   A. FCC Rules & Regulations Part 80 ..... (80.401).
   B. IMO publication: *Master Plan of Shore Based Facilities* (Most recent edition) ..... (80.1085(d)).
   C. *Alphabetical List of Maritime Mobile Call Signs* ..... (80.401)
   D. *List of Ship Stations* ..... (80.401)
   E. *Manual for Use by Maritime Mobile Service and Satellite Service* ..... (80.401)
   F. *List of Coast Stations* ..... (80.401)
   G. *List of Radiodetermination and Special Services Stations* ..... (80.401)

X. MAINTENANCE

1. Ships must select a method of maintenance that depends on the area of operation. ..... § 80.1105
   A. Ships operated in Sea Area A1 or A2 must select at least one of the methods of maintenance.
   B. Ships operated in Sea Areas A3 and A4 must select at least two of the methods of maintenance.

2. METHODS

   A. At-sea maintenance -- requires at least one member of the crew holding a GMDSS Maintainer License.
   B. Shore based maintenance -- requires ship to have shore based maintenance available.
   C. Duplication of equipment -- means that the following equipment, in addition to all other requirements must be carried:
      1. Sea Area A1--a complete VHF DSC installation (including antenna).
      2. Sea Area A2--a complete VHF DSC installation and a complete MF DSC installation (including antennas).
      3. Sea Area A3--a complete VHF DSC installation and, either a complete MF/HF DSC installation (including antenna), or a complete INMARSAT ship earth station, but not a separate power source).
      4. Sea Area A4 -- a complete VHF DSC installation and a complete MF/HF installation (including separate antenna but not a separate power source).

NOTES: The duplicated equipment must be immediately available for use--this means that while the equipment does not have to be in standby, it must be installed and ready to be operated without any assembly.

D. SPARE PARTS

1. Tools, spares, and test equipment as deemed necessary

Instruction and maintenance manuals. recommended spare parts, tools; and test equipment for all required equipment should be provided. . . . . (80.1105(f))